Evidence-Based Project

Reducing Adolescent Pregnancy Rate with Comprehensive Sex Education

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Abstract

Background: Adolescent pregnancy leads to negative health outcomes including increased morbidity and mortality and negative financial and social ramifications. Many states only provide abstinence-only sex education, which teaches that abstaining from sexual activity until marriage is the only acceptable practice. Comprehensive sex education [CSE] also teaches prevention methods for pregnancy and sexually transmitted infections [STI's] such as effective use of condoms and contraceptives. Research demonstrates that CSE for adolescents results in increased health outcomes and decreased pregnancy rates.

Purpose: Using the PET model, this project aims to determine if CSE is more effective than abstinence-only sex education in reducing teen pregnancy rate.

Method: A literature review of scholarly journal articles from the last five years was conducted through the Randall Library nursing database. Five articles were selected, including two systematic reviews of randomized control trials, a systematic review of varying levels of evidence, a quasi-experimental study, and a narrative review.

Results: Scholarly evidence for the implementation of CSE in evidence-based practice indicates positive outcomes by demonstrating reduction of teen pregnancy rate, decrease of STI's, and improved interpersonal wellbeing for adolescents.

Conclusion: CSE should be implemented by healthcare providers in schools and communitybased settings to improve healthcare outcomes for adolescents.

Implications: Legislators should be petitioned to mandate and increase funding for CSE curriculums. Collaboration among healthcare providers, teachers, and school administrators is necessary to implement CSE curricula.

Reducing Adolescent Pregnancy Rate with Comprehensive Sex Education

Pregnancy in adolescence poses physical, social, and economic risk factors. Negative health outcomes include malnutrition, preeclampsia, anemia, maternal mortality, preterm birth, decreased APGAR scores, stillbirth, and neonatal mortality (Maheshwari et al., 2022). Adolescent pregnancy can lead to socioeconomic difficulty such as low educational achievement and a continued cycle of poverty (Radulovic et al., 2020). Although teen pregnancy rates have decreased in recent years, the rate in the US still remains the highest among other developed countries, at 30% of women under age 20 (Bordogna et al., 2023). Studies have questioned whether the rate of pregnancy can be reduced by providing comprehensive sex education in schools rather than abstinence-only sex education. Abstinence-only sex education teaches that abstinence of all sexual activity before marriage is the only acceptable practice (Cook, 2020). Comprehensive sex education also includes teaching on sexual protection measures such as condoms and contraceptives to prevent pregnancy and STI's. CSE is not federally mandated or mandated in all states, which allows schools to determine whether or not it will be provided (Cook, 2020).

Using the PET model, this paper will report if comprehensive sex education in school rather than abstinence-only sex education increases or decreases the rate of pregnancy in women under age 20. This paper will determine the PICO question: In adolescent women under age 20 (P), does comprehensive sex education (I) reduce the incidence of pregnancy (O), when compared to adolescents who receive abstinence-only sex education (C)?

Synthesis of Evidence

Selection of the Articles

A comprehensive review of research was conducted to develop evidence-based practice for the implementation of an intervention. The purpose of this evidence was to determine if comprehensive sex education is an effective intervention in reducing teen pregnancy rates when compared to abstinence-only sex education. The Randall Library nursing database on the UNCW website was used to find peer-reviewed scholarly journal articles published within the past 5 years. Keywords used in the search included "Effectiveness of sexual education," "Comprehensive sexual education," and "Sexual education AND teen pregnancy." At least 20 articles from the subsequent results were then reviewed to determine the best possible evidence for the intervention.

This review includes five research articles, which are summarized in Table 1. Two of the articles are Level I evidence, two are Level II evidence, and one is Level V evidence. As systematic reviews of randomized control trials, Bordogna and colleagues' (2023) and Malizgani and colleagues' (2022) research articles are both classified as Level I evidence (Dang et al., 2021). The studies are both selective in their review process and use the Preferred Reporting Items for Systematic Reviews and Meta-Analyses [PRISMA] protocol to evaluate evidence. Goldfarb and Lieberman's (2021) and Mark and Wu's (2022) studies are classified as Level II evidence. Goldfarb and Lieberman's study is a systematic review of randomized control trials, quasi-experimental studies, meta-analyses, and systematic literature reviews (2021). Mark and Wu's research article is a quasi-experimental study (2022). Maheshwari and colleagues' narrative review of systematic reviews, case-control studies, clinical practice guidelines, and research articles (2022) is classified as Level IV evidence (Dang et al., 2021).

Article Critiques

A wide body of research is available on the topic of comprehensive sex education [CSE] from a variety of sources, experimental methods, and levels of reliability. The body of literature on this topic mainly focuses on the effects of CSE on pregnancy rate and contraction of STI's through systematic reviews, meta-analyses, quasi-experimental studies, and literature reviews. Some research is available on the additional effect of implementing CSE. The two systematic reviews of randomized-control trials selected indicate with a strong level of evidence that CSE is statistically significant in reducing pregnancy rate (Bordogna et al., 2023) (Malizgani et al., 2022). Mark and Wu's quasi-experimental study demonstrates a 3% reduction in teen pregnancy rate at the county level due to the presence of federal funding for CSE (2022). The systematic review of randomized control trials, quasi-experimental studies, meta-analyses, and systematic literature reviews indicates that CSE starting in elementary school leads to decreased teen pregnancy rate and STI's, intimate partner violence, child sexual abuse, and increased awareness of diversity, media literacy, and healthy relationships (Goldfarb & Lieberman, 2021). The narrative review determines risk factors and adverse outcomes of teen pregnancy and identifies CSE, reduction of child marriage, and community awareness as effective interventions from current research (Maheshwari et al., 2022).

The systematic reviews by Bordogna and colleagues' (2023) and Malizgani and colleagues' (2022) provide strong evidence by mitigating bias and margin of error through rigorous guidelines for studies included, a professionally recognized analysis protocol (PRISMA), and a high number of study participants studied over a long period of time. Since such a wide body of evidence was studied, not all of the studies used the same methods or studied the same interventions. A weakness of the systematic reviews is the possibility of confounding variables due to these differences in studies. Goldfarb and Lieberman's (2021) and

Mark and Wu's (2022) systematic review and quasi-experimental study are also strong by including a large number of participants over a long period of time. A potential weakness of Mark and Wu's article is the presence of confounding variables due to a lack of research of outcomes of CSE other than teen pregnancy rate (2022). Goldfarb and Lieberman's study explores other outcomes including STI's, intimate partner violence, child sexual abuse, and health of relationships, but a potential weakness is a lack of a rigorous set of criteria for research included in the review (2021). Research included quasi-experimental studies, meta-analyses, and systematic literature reviews which are not the highest level of evidence. The narrative review by Maheshwari and colleagues effectively provides a broad picture of risk factors, outcomes, and interventions of teen pregnancy in an easy-to-digest format (2022). However, as a narrative review where evidence is interpreted and presented without a systematic process, this article is not strong evidence and has a high potential for bias.

The evidence-based practice implication of the five articles selected is that CSE should be implemented by healthcare providers in school and clinical settings to decrease pregnancy rate and gain additional positive outcomes for adolescents. The intervention of CSE can be implemented in a variety of settings including schools, health classes, doctors' offices, and hospitals.

Translation: Fit and Feasibility

This review can be applied to any healthcare setting in contact with adolescents but is most applicable to schools and health classes. The research studies included directly apply to this setting because they determine the impact of school based CSE programs, community involvement, and federal CSE funding across US counties. According to Bordogna, "Data from this review can serve as evidence for implementing CSE into schools, homes, or communitybased platforms" (2021). Four out of five research articles are a review of multiple other studies rather than a single experimental study.

Samples

The systematic review by Bordogna and colleagues used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses [PRISMA] protocol to evaluate the findings of 29 randomized control trials from 1990 to 2021 which were deemed to meet the standards of reliability (2023). Sources included Medline (PubMed), Embase (Ovid), Cochrane Central Register of Controlled Trials. A total of 23,915 participants were evaluated (Bordogna et al., 2023). The result of CSE intervention through school-based, home-based, and virtual programs was studied.

The systematic review by Goldfarb and Lieberman also used the PRISMA protocol to evaluate 80 research studies from 1990 to 2017 which met criteria (2021). Articles were selected from a total of 8,058 studies from sources including ERIC, PsycINFO, and MEDLINE (Goldfarb & Lieberman, 2021). Types of articles included experimental and quasi-experimental designs, meta-analyses and systematic literature reviews. The article aimed to provide a broad picture of the outcomes and effects of CSE on adolescent sexuality (Goldfarb & Lieberman, 2021). In the research studies selected, US-based CSE interventions both within a sexual education class and across the general curriculum from grades K-12 were analyzed.

The article by Maheshwari and colleagues was a narrative review and synthesis of 59 other research studies including systematic reviews, case-control studies, clinical practice guidelines, and research articles (2022). The systematic review by Malizgani and colleagues also used the PRISMA framework to evaluate the results of 34 randomized control trials from sources including PubMed, Cochrane, and Hinari databases from 2010 to 2022 (2022). Most of the

interventions studied were school-based programs. The quasi-experimental study by Mark and Wu used difference-in-difference procedures to compare data from the National Vital Statistics System [NVSS] and the Survey of Epidemiology and End Results [SEER] in 2,927 US counties to compare the level of funding present for CSE versus the birth rate of 14-19 year-olds from 1996 to 2017 (2022). The intervention studied in this article was the presence of federal funding for school-based CSE curricula.

Stakeholders

The stakeholders for this intervention are federal and state legislators, school administrators, teachers, and healthcare providers working in schools or community-based programs for adolescents. Federal and state legislators can help implement the intervention by granting funding for schools to include CSE in their curriculum. School administrators must be part of the planning process. Teachers can assist school nurses in arranging educational materials and setting aside classroom time for instruction. School nurses can teach health classes and act as a resource for adolescents to have open, informative conversations. Healthcare workers either in schools or community-based settings can provide education and information to adolescents to implement the intervention of CSE.

Resources

In many states, abstinence only sex education is still used as the primary sex education curricula, due to lack of education regarding the effectiveness of CSE, lack of funding, or lack of CSE mandates. The proposed EBP implementation of CSE in schools and community-based health programs requires cooperation from legislators and increased education for parents, teachers, healthcare providers, and administrators. Cooperation among these individuals is necessary to create and implement CSE programs for adolescents.

Translation Path Recommendation

Rationale

Five pieces of research literature were evaluated to determine the effect of comprehensive sex education [CSE] on the pregnancy rate of adolescents. Findings of these studied indicated implementation of CSE lead to a decrease of teen pregnancy rates on an international level (Malizgani et al., 2022); a 3% reduction of teen pregnancy rate at the county level (Mark and Wu, 2022); a decrease in STI incidence, sexual activity, and unsafe sexual behaviors (Bordogna et al., 2023), and a reduction of teen pregnancy rate, decreased rate of STI's, and improved interpersonal wellbeing Goldfarb & Lieberman, 2021). Based on these findings, CSE is supported by evidence to be used in nursing practice in school, home-based, and community programs (Bordogna et al, 2023). Research indicates that implementation of this intervention would lead to a decreased teen pregnancy rate and increased health outcomes for adolescents. **Change Process**

The 8-step Kotter international change process, established by John Kotter in 1996, will guide implementation of this EBP intervention (Kotter, 2022). The Kotter process for instituting change includes creating a sense of urgency regarding change, involving interdisciplinary collaboration, removing barriers, and generating measurable short-term steps (Kotter, 2022). A sense of urgency should be created by introducing the rationale for change and new research that supports the outcomes. Nurses, especially those working in schools and community health centers that treat adolescents, should be educating regarding the need to implement CSE into practice. Outcomes of adolescent pregnancy such as preeclampsia, premature rupture of membranes, anemia, STI's, maternal mortality, preterm births, low birth weight, low Apgar scores, stillbirths, and neonatal mortality should be emphasized (Maheshwari, 2022).

Collaboration includes cooperation and communication among legislators, federal and community officials, school administrators, clinic administrators, and healthcare providers such as nurses and physicians. Federal funding and mandated CSE programs has been demonstrated to improve outcomes for adolescents including reduction of teen pregnancy rate (Mark and Wu, 2022). Cooperation among all these groups is needed to successfully create and implement CSE programs.

Barriers to implementation of CSE include resistance from legislators and government officials to provide funding for or mandate CSE programs and resistance from parents to allow these programs in schools. To address this potential barrier, community education should be applied to educate officials and parents on the need for and effectiveness of CSE including decreased rate of pregnancy, STI's, and sexual activity. Short-term, measurable goals in implementing CSE include collecting signatures to petition lawmakers to increase funding for or mandate CSE programs, providing education sessions for healthcare workers or community members and surveying knowledge before and after, and implementing CSE sessions into health class curriculums and measuring student knowledge and rate of pregnancy before and after the program was introduced.

Conclusion

Adolescent pregnancy remains a national health concern in the United States. Negative outcomes for pregnant adolescents include increased morbidity and mortality, socioeconomic difficulty, and social stigma. Scholarly evidence for the implementation of CSE versus abstinence-only sex education indicates positive outcomes by demonstrating reduction of teen pregnancy rate, decrease of STI's and improved interpersonal wellbeing for adolescents (Goldfarb & Lieberman, 2021). To mitigate physical, social, and economic risk factors, CSE should be implemented in school and community based programs as evidence-based practice.

References

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Table 1.

Summary of	of Selected	Literature	with Level	of Evidence	Rating
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Title	First	Purpose	Methods	Findings/Conclusion	Level of
	Author's	-			Evidence*
	Last Name				
	(Year of				
	Publication)				
Comprehensi ve sexuality education to reduce pregnancy and STIs in adolescents in the United States: A systematic review and meta-analsis	Bordogna (2023)	To determine the effect of comprehensive sex education [CSE] on teen pregnancy rate, STI incidence, sexual activity, and sexual behaviors versus abstinence-only sex education [AOSE].	The Preferred Reporting Items for Systematic Reviews and Meta-Analyses [PRISMA] protocol was used to evaluate the findings of 29 randomized control trials from 1990-2021 from sources including Medline (PubMed), Embase (Ovid), Cochrane Central Register of Controlled Trials. A total of 23,915 participants were evaluated.	Four of the seven studies reporting pregnancy rate were statistically significant in favor of CSE. All studies reporting pregnancy rate favored CSE over AOSE. All studies reporting STI incidence, sexual activity, and sexual behaviors favored CSE over AOSE. There were no statistically significant results reporting improvement of social discomfort.	Level I Systematic review & meta- analysis of randomized control trials.
Three decades of research: The case for comprehensiv e sex education	Goldfarb (2021)	To determine the effect of school- based CSE programs on teen pregnancy rate, STI's, and other outcomes.	Used the PRISMA method to evaluate 80 research studies from 1990 to 2017 which met the systematic review criteria. Outcomes of the studies were analyzed for the effect of CSE.	There is strong support for CSE starting in elementary school, leading to decreased pregnancy rate and STI's, intimate partner violence, child sexual abuse, and increased awareness of diversity, media literacy, and healthy relationships.	Level II Systematic review of randomized control trials, quasi- experiment al studies, meta analyses, and systematic literature reviews.
Maternal and neonatal outcomes of adolescent pregnancy: a narrative review.	Maheshwari (2022)	To summarize and review defining risk factors and outcomes of adolescent pregnancy as well as interventions such as sex	Presents a summary of evidence from 59 research studies including sources from Centers for Disease and Control, World Health Organization, Journal of Maternal Fetal Neonatal Medicine,	Risk factors for teen pregnancy supported by studies include early sexual activity and/or marriage, lack of sex education, lower education level, poverty, substance abuse, and instability in the	Level V Narrative review of systematic reviews, case- control studies, clinical practice

		education, contraceptives, and community- level awareness.	StatPearls, and <i>British</i> <i>Medical Journal</i> in a cohesive, easy to understand article.	home. Outcomes of teen pregnancy include preeclampsia, premature rupture of membranes, anemia, STI's, maternal mortality, preterm births, low birth weight, low Apgar scores, stillbirths, and neonatal mortality. Interventions supported by research studies include CSE, reduction of child marriage, and community-level awareness.	guidelines, and research articles.
Factors influencing the integration of comprehensiv e sexuality education into educational systems in lowand middle- income countries: a systematic review	Malizgani (2022)	To determine if federally mandated implementation of sex education into curricula in low- and middle- income countries effects teen pregnancy rate	Used the PRISMA framework to evaluate the results of 34 randomized control trials from sources including PubMed, Cochrane, and Hinari databases.	Mandated sex education is evidenced to decrease teen pregnancy rates when studies on an international level. However, mandated sex education is not the sole or main reason for the significant decrease in teen pregnancy rates since 2007.	Level I Systematic review & meta- analysis of randomized control trials.
More comprehensiv e sex education reduced teen births: Quasi- experimental evidence	Mark (2022)	To determine whether federal funding towards CSE programs has an effect on the pregnancy rate of 14–19- year-olds at the county level in the United States.	Analyzed data from the National Vital Statistics System [NVSS] and the Survey of Epidemiology and End Results [SEER] using difference-in- difference procedures in 2,927 US counties to compare the level of funding present versus the birth rate of 14-19 year-olds from 1996 to 2017.	Reduction in teen birth rate by 3% at the county level when funding for CSE is present.	Level II Quasi- experiment al study

* (Dang et al., 2021)